REMARKS

Claims 1-21 were pending at the time of examination. No claims have been amended, canceled or added. The applicants respectfully request reconsideration based on the foregoing amendments and these remarks.

Claim Rejections – 35 U.S.C. § 103

Claims 1, 2, 4-5, 8, 9, 13, 16-17 and 20 were rejected under 35 U.S.C § 103(a) as being unpatentable over Peterson, "3D Studio MAX 2 Fundamentals" (hereinafter "Peterson") in view of U.S. Patent No. 6,342,892 to Van Hook et al. (hereinafter "Van Hook") in view of U.S. Patent No. 6,322,448 to Kaku et al. (hereinafter "Kaku") in view of Foley et al., "Computer Graphics: Principles and Practice" (hereinafter "Foley") and further in view of U.S. Patent No. 5,214,758 to Ohba et al. (hereinafter "Ohba"). The Applicants respectfully traverse these rejections.

The Examiner primarily relies on Peterson's motion blur techniques as teaching the limitations of claim 1 relating to the generation and positioning of the dummy object. The applicants respectfully disagree.

Claim 1 is directed to a computer-readable storage medium storing a program for a video game, which draws an object in a virtual space, and recites instructions to make a computer perform the steps of:

> receiving object data representing an object at a particular instance of a virtual time-space continuum;
>
> generating a dummy object of said object, the dummy object having an identical shape of said object, by duplicating said object data;
>
> determining a first position of said object and a second position of said dummy object so that said dummy object thus generated is positioned behind said object and overlaps only in part with said object when observed from a view point, the orientation of said dummy object being the same as that of said object; and
>
> drawing, in a digital video frame representing said instance of said virtual time-space continuum, said object at said first position and drawing said dummy object at said second position except for an overlapping portion between said object and said dummy object when observed from the view point and wherein the drawing of said dummy object is in a second lightness different from a first lightness of said object, said second lightness being based on said first lightness.

Some significant point to note are: the object data describes the object's appearance at a particular instance in time that can, for example, be rendered as a

digital video frame on a display screen; the dummy object has an identical shape to the object and is generated by duplicating the received object data; and the drawing occurs "in a digital video frame representing said instance of said virtual time-space continuum." Thus, the object and the dummy object are generated from the same object data, which represents the object at a particular instance of the virtual time-space continuum, and that this instance can be represented in a digital video frame.

Peterson discusses 3D animation software, and in particular a method is described of how to make an animation appear more realistic by including motion blur. The techniques for generating the motion blur, however, do not teach the limitations of claim 1 for several reasons.

First, the "dummy objects" (or "multiple copies") suggested by Peterson are created from different "instances" of the virtual space time-position continuum (see for example the "Duration Subdivisions" in Peterson, page 454, second paragraph), to use the applicants' terminology, rather than from the object data representing an object at a particular instance of a virtual time-space continuum. Peterson teaches the creation of an object motion blur effect for an object by rendering, in a particular single frame, several other images of the object sampled at different times, for instance a frame (or sampling) before the time depicted in the rendered frame and/or a frame (or sampling) subsequent to the time rendered in the present frame. Thus, what is shown is a residual image (and perhaps a future image) in addition to the current image of the object. As should be clear from the above discussion, these copies do not meet the requisites of the dummy objects of claim 1, since the dummy objects are generated from object data for a particular instance in the virtual space time-position continuum.

More importantly, further review of the reference suggests that these are not even copies of the object as originally appearing in the frame. As noted in Peterson, animated object transforms and object deformations are reflected when performing object motion blur (page 455). The only way that these features can be depicted in Peterson's copies is by making them correspond to objects sampled at different times, i.e., different frames. Further, Peterson teaches that object motion blur can be used when the object is moving with a curvilinear trajectory (page 455; FIG. 16.10). Each of the foregoing characteristics suggests that Peterson's copies are just copies of the

object in its position at a different times, and not as a particular instance of the virtual time-space continuum.

Kaku likewise fails to teach or suggest the limitations of claim 1. Kaku relates generally to an image processing device whereby in the display of the movement of models in virtual space, residual image presentation is applied to the models in order to represent the track of movement of the model as residual images. Actual and residual images are simultaneously displayed on the screen, the residual images processed to be semi-transparent, the degree of transparency increasing as the frames to which the residual images correspond to become more distant in time from the present frame (col. 22, line 58 to col. 3, line 1). This is similar to Peterson in that the residual images are merely copies of the object at different points in time for the object.

Van Hook was cited by the Examiner for its teachings as to hidden surface removal while Foley was cited for motivation to perform hidden surface removal, but it is clear that neither of these documents cure the deficiencies of Peterson and Kaku, discussed above.

The Examiner admits that none of Peterson, Van Hook, Kaku, and Foley teaches receiving object data representing an object at a particular instance of a virtual time-space continuum. The Examiner also admits that none of Peterson, Van Hook, Kaku, and Foley teaches a dummy object having an identical shape of the received object. The Examiner also admits that none of Peterson, Van Hook, Kaku, and Foley teaches drawing in a digital video frame representing said instance of said virtual time-space continuum. That is, despite four different references are cited in combination, the Examiner concedes that at least three of the four steps recited in claim are not taught by this combination of references. Thus, the Examiner relies on a fifth reference, Ohba, to cure this serious deficiency and to teach these limitations. The applicants respectfully disagree. Generally, Ohba relates to an "animation producing apparatus," which produces an animation on the basis of a fundamental shape parameter. The animation is produced by an interpolation process based on a plurality of previously stored fundamental shapes, and based on a plurality of parameters corresponding to the plurality of fundamental shapes, which may be varied, added or deleted by a user. As can be seen in Ohba, the shape of the original object and the dummy object is the same only at time points T1 and T8. That is, for

any timing points except for T1 and T8, the original object and the dummy object have different shapes. Furthermore, even if – for the sake of argument - Ohba would disclose an original object and a dummy object having the same shape, it is not clear how the object motion blur technology of Peterson would be combined with Ohba to result in the invention recited in claim 1. In order to establish a *prima facie* case of obviousness, the Examiner must show a motivation to combine Ohba and the other four references. Nothing in Ohba suggests a desire to combine its techniques with the object motion blur techniques of Peterson. Furthermore, the Examiner needs to show a reasonable expectation of success, which the Examiner has failed to do since he has not shown how the techniques would be combined. Merely stating that "it would allow the fine tuning of the motion of the object" is not sufficient to satisfy these requirements. Finally, the combination of the references must teach or suggest all the claim limitations. Even if it were possible to combine Ohba with the previously cited references, the combination still would not teach at least the limitation of "a dummy object having an identical shape of the received object." Thus, neither of the cited references, alone or in combination, teaches or suggests the limitations discussed above with respect to claim 1. For at least these reasons, the rejection of claim 1 is unsupported by the art and should be withdrawn.

Claims 2-5 all depend from claim 1, and are therefore not anticipated nor obvious for at least the reasons discussed above. Moreover, these dependent claims recite additional limitations, and are therefore allowable for these reasons as well. However, in light of the above distinctions in the independent claims, further discussion of the dependent claims is deemed unnecessary.

Claims 6 – 8, and 11-20 are independent claims, which are believed to be patentable over the art of record for reasons substantially similar to those set forth above with respect to claim 1.

Claims 9-10 depend from claim 8, and claim 21 depends from claim 20, and are therefore not anticipated nor obvious for at least the reasons discussed above. These dependent claims also recite additional limitations, and are therefore allowable for these reasons as well. However, in light of the above distinctions in the independent claims, further discussion of the dependent claims is deemed unnecessary.

Conclusion

The applicants believe that none of the pending claims are anticipated by or obvious in view of the cited art and respectfully requests a Notice of Allowance for this application from the Examiner. Should the Examiner believe that a telephone conference would expedite the prosecution of this application, the undersigned can be reached at the telephone number set out below.

The applicants hereby petition for any extension of time which may be required to maintain the pendency of this case, and any required fee for such extension or any further fee required in connection with the filing of this response is to be charged to Deposit Account No. 50-0388 (Order No. SIP1P044).

Respectfully submitted,
BEYER WEAVER & THOMAS, LLP

Fredrik Mollborn
Reg. No. 48,587

P.O. Box 70250
Oakland, CA 94612-0250
(650) 961-8300